

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
2 June 2005 (02.06.2005)

PCT

(10) International Publication Number
WO 2005/050743 A1

(51) International Patent Classification⁷: **H01L 29/78**,
21/336, 21/316

(74) Agents: ASAHI, Kazuo et al.; Nishi-Shinbashi Noa
Bldg., 4th Floor, 18-9, Nishi-Shinbashi, 1-chome, Mi-
nato-ku, Tokyo 105-0003 (JP).

(21) International Application Number:
PCT/JP2004/017439

(81) Designated States (*unless otherwise indicated, for every
kind of national protection available*): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG,
KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG,
MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH,
PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(22) International Filing Date:
17 November 2004 (17.11.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2003-391459 20 November 2003 (20.11.2003) JP
2004-219191 27 July 2004 (27.07.2004) JP

(84) Designated States (*unless otherwise indicated, for every
kind of regional protection available*): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE,
SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, ML, MR, NE, SN, TD, TG).

(71) Applicant (*for all designated States except US*): SEIKO
EPSON CORPORATION [JP/JP]; 4-1, Nishishinjuku
2-chome, Shinjuku-ku, Tokyo 163-0811 (JP).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): MIYATA, Masayasu
[JP/JP]; c/o Seiko Epson Corporation, 3-5, Owa 3-chome,
Suwa-shi, Nagano-ken 392-8502 (JP). UEHARA,
Masamitsu [JP/JP]; c/o Seiko Epson Corporation, 3-5,
Owa 3-chome, Suwa-shi, Nagano-ken 392-8502 (JP).

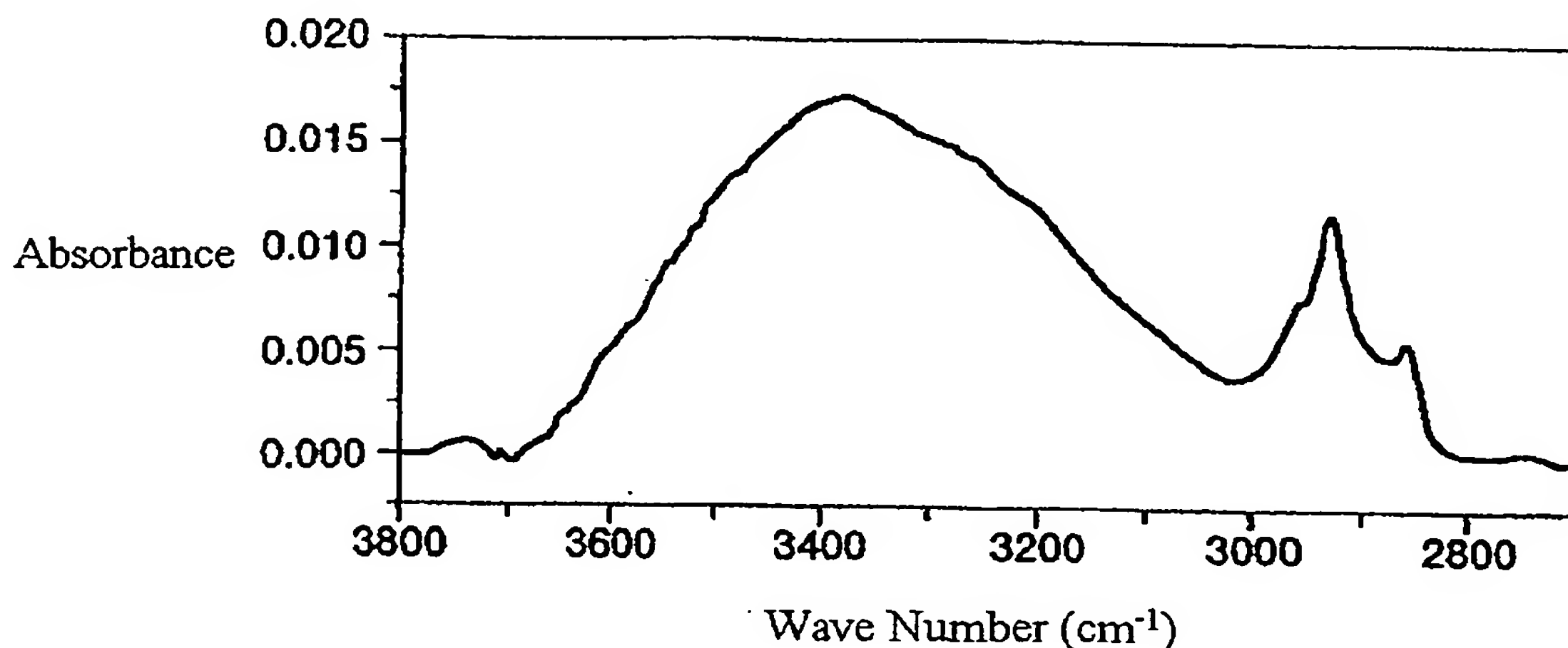
Published:

- with international search report
- with amended claims and statement

*For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.*

(54) Title: SEMICONDUCTOR DEVICE, ELECTRONIC DEVICE AND ELECTRONIC APPARATUS

(Example 1)



(57) Abstract: An semiconductor device (1) of the invention includes a semiconductor substrate provided with a channel region (21), a source region (22) and a drain region (23), a gate insulating film (3) laminated on the channel region (21), and a gate electrode (5). The gate insulating film (3) is formed of an insulative inorganic material as a main material, and further contains hydrogen. The absorbance of infrared radiation of which wave number is in the range of 3200 to 3500 cm⁻¹ is 0.02 or less when the gate insulating film (3) to which an electric field has never been applied is measured with Fourier Transform Infrared Spectroscopy at room temperature.

WO 2005/050743 A1